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- (2) supplying the stream of precursor ions and a collision gas to a multipole and providing an RF signal to the multipole, whereby the multipole functions as a collision cell;
- (3) fragmenting said precursor ions in the RF multipole by collisions with the gas molecules, in order to form primary fragment ions;
- (4) supplying additional alternating current to the multipole at a frequency selected to cause resonance excitation of a desired primary fragment ion mass-to-charge ratio, whereby ions with said desired primary fragment ion mass-to-charge ratio are excited and undergo collisions with the gas molecules causing production of secondary fragment ions;
- (5) modulating the alternating current signal applied in step (4) whereby periods in which said alternating current signal is applied alternate with periods in which the alternating signal is not applied;
- (6) detecting the ion signal after fragmentation with a mass spectrometer and collecting one set of data for one spectrum, representative of the ion spectrum when the alternating current signal is applied and another set of data for another spectrum, representative of the ion spectrum when the alternating current signal is not applied;
- whereby said other spectrum can be subtracted from said one spectrum, to generate a subtracted spectrum showing the secondary fragment ions without the presence of the primary fragment ions except for any said primary fragment ions which are generated by step (4).
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Please amend Claim 14 as follows: ✓

B2

14 (Twice Amended) An apparatus, for analyzing a substance by resonance excitation of selected ions and selective collision-induced dissociation, the apparatus comprising:

an ion source for generating a stream of precursor ions;

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a collision cell, including a quadrupole rod set, for receiving the stream of precursor ions and provided with a collision gas, for collision-induced dissociation between the precursor ions and the buffer gas;

a power supply connected to the quadrupole rod set for generating an RF field in the quadrupole rod set for guiding fragment ions produced by the collision-induced dissociation between the ions and the buffer gas and for applying an additional alternating current field at a frequency selected to excite a desired ion;

a modulation means connected to the power supply, for modulating the alternating current signal, whereby periods in which said alternating current signal are applied alternate with periods in which the alternating current signal is not applied.

Please amend Claim 17 as follows:

β^3
17. (Amended) An apparatus as claimed in claim 15, which includes a first mass analysis section for selecting a precursor ion.
